Composeable FORCEnet (CFn)

SPAWAR/NDIA Industry Conference

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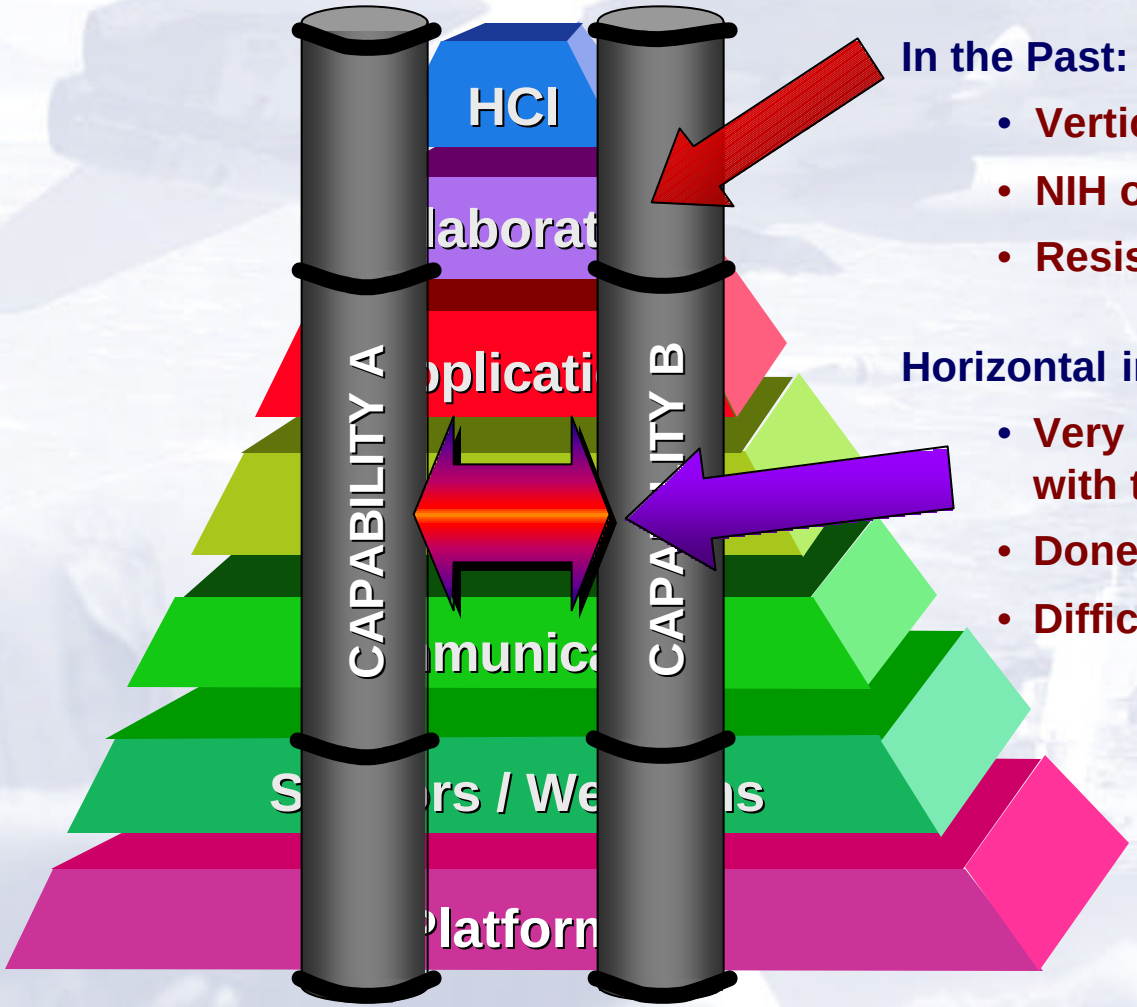
FORCEnet Is Delivering the Naval Warfighter's 'Edge' to the Joint World

- **Technical Composeability for:**
  - **Communications linkages**
  - **Operational networking**
  - **Information flow management**
  - **Distributed information processing and storage**
  - **Full spectrum military and civil affairs program applications**
  - **Virtual collaboration**
  - **Functional, temporal, and geospacial visualization**
- **Operational Composeability to:**
  - **Accomplish any mission assigned**
  - **Facilitate seamless participation in any C/JTF**
  - **Form ad hoc communities of interest within the C/JTF and up through Tier 0 commands and across coalition boundaries**
- **Doctrinal and Tactical Composeability to:**
  - **Flex with any situation**
  - **Explore and exploit new concepts of operation**
  - **Deal with new threats as they appear**

And more to the Point…

Communications linkages	**Dial-a-Comm Link** Select the software programmable or networked radios connection and waveform	JTRS, VRC-99, EHF MDR, TC, Teleport, SHF/CA FCs, TCDL	**Compose** the kind of connectivity and raw bandwidth you need to support your mission
Operational networking	**Dial-a-Network** Operational network formation to meet the force and mission needs (e.g. GIG-BE, TCS, JTF Warnet, EHF MDR)	GIG-BE, TCS, JTF Warnet, EHF MDR	**Compose** the community of interests you need to support your mission
Information flow management	**Dial-a-Precedence** Establish bandwidth allocation and priority for applications and key individuals	ADNS, BMAC QOS, TCS	**Compose** lanes with different speed limits and priority for your mission related data flows
Distributed information processing and storage	**Dial-a-Computer** Establish the roles of the computers that will support the mission, their interfaces to your FORCEnet, and the information managers who run them	NCES, XTCF, DJC2, OA, RAPIDS, CORBA, GRS, IT-21, NMCI, CAS, COWAN/CENTRIX	**Compose** your information management environment
Full spectrum military and civil affairs program applications	**Dial-an-Application** Establish the operational cells and specific applications that will pubish information into the FORCEnet	GCCS-M, GCSS-M, OA, TBMCS, ADOCS, JBMCS	**Compose** the sensing, planning, decision support, and weapons applications that will publish into the FORCEnet to support support your mission
Virtual collaboration	**Dial-a-Meeting** Establish the collaborative environment that the participants in the mission use to coordinate actions and activities	GeoViz, IWS, DCTS, NetMeeting, VoIP, IP VTC	**Compose** the virtual rooms, participants, schedule, and battle rhythm
Functional, temporal, and geospacial visualization	**Dial-a-GUI** Establish the standards for the form of presentation and FORCEnet subscription rules to be used to support your mission	GeoViz, WebCOP, K-WEB,	**Compose** the Alerting, Status Board, and COP views to be shared by the force

FORCEnet Capabilities Are "Composed" of Technologies



In the Past:

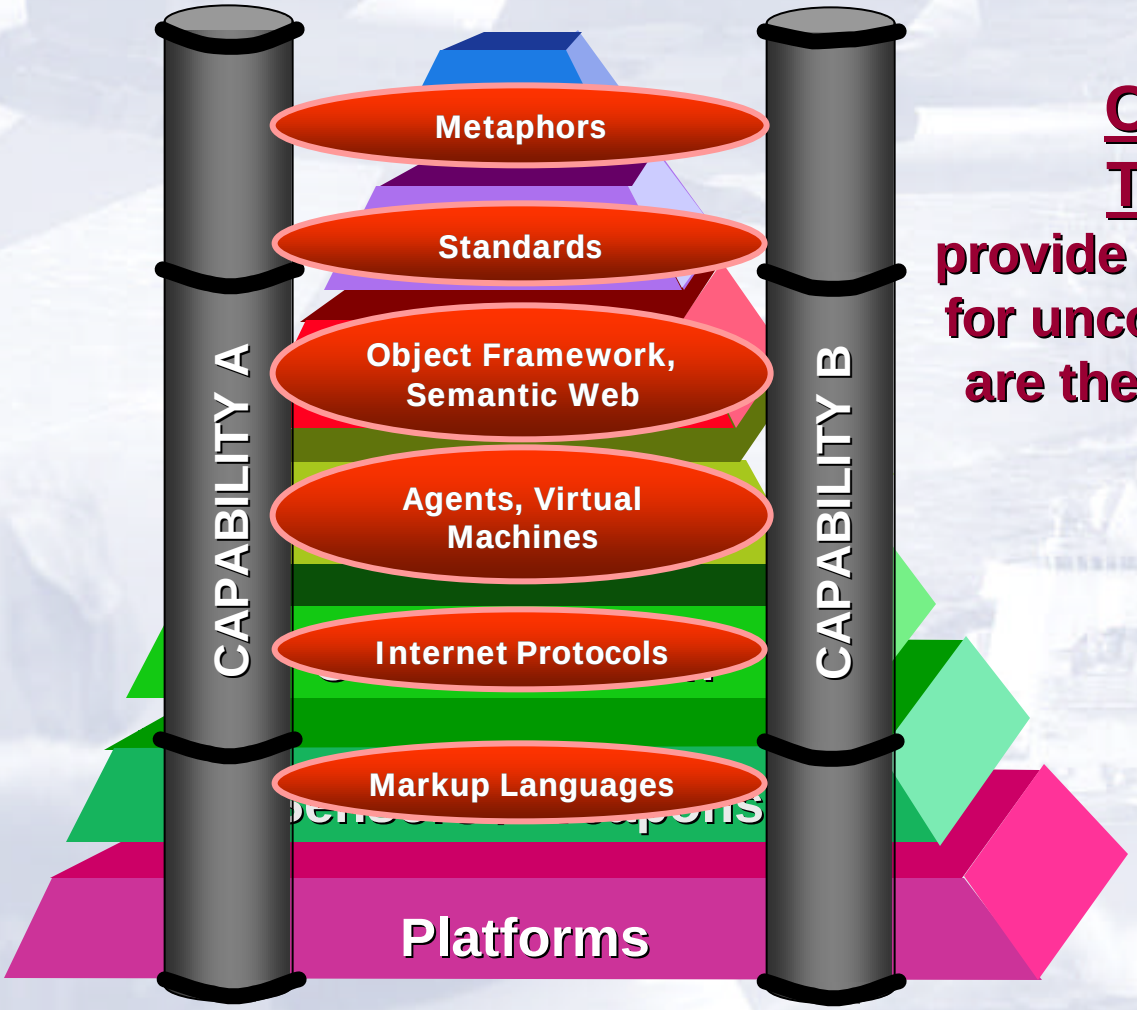
- **Vertically Integrated Stovepipes**
- **NIH often suboptimizes capability**
- **Resistant to new technology**

Horizontal integration is:

- **Very costly, increases exponentially with the number of systems**
- **Done case by case by experts**
- **Difficult, at best, to sustain**

Systems-of-Systems increase non-interoperability over time

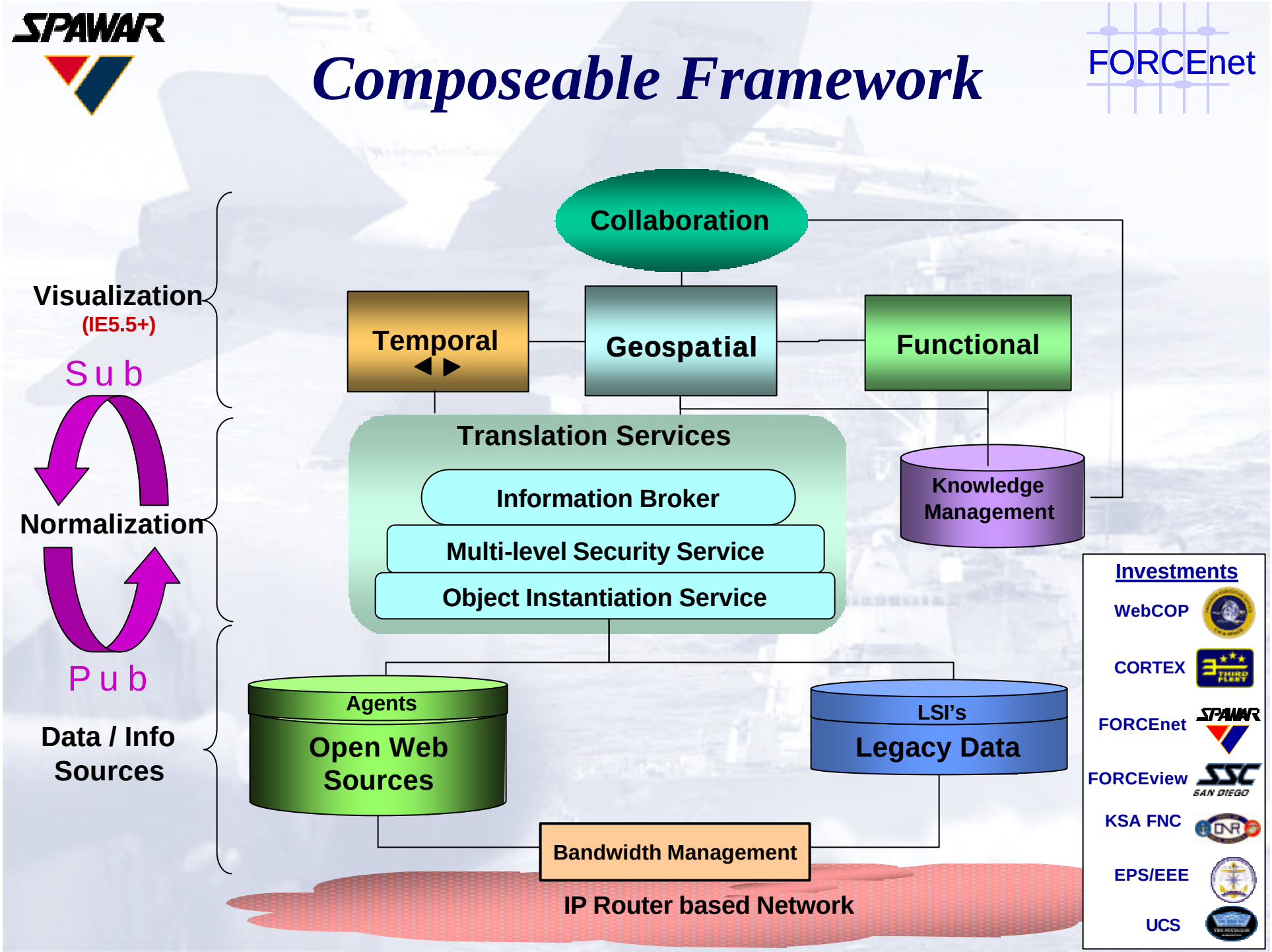
Interoperability and Access Through Technical Composeability



Composeable Technologies

provide a common framework for uncommon functions and are the enablers of massive effects

Composeable Framework



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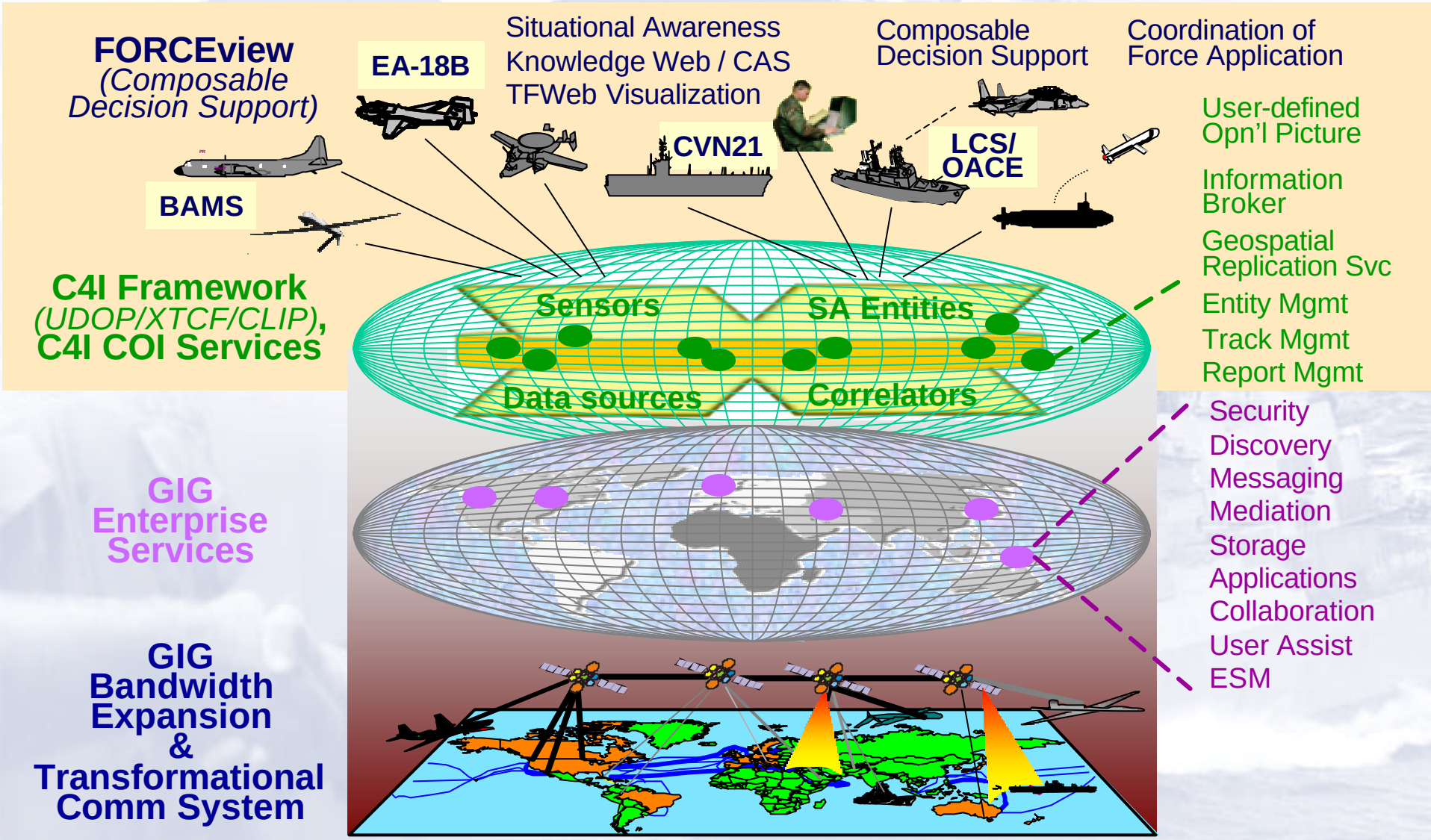
CFn Contribution to Realizing FORCEnet / GIG Distributed Services Architecture



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Enabling a Networked Naval Force

CTF 74 before…..

- **Four months ago…**
  - **Paper maps and plastic covers were used with grease pencils**
    - ✓ **Key areas**
    - ✓ **PIMs**
    - ✓ **Some of the tracks**
  - **IMAT (ASW coverage and vulnerabilities) on a stand-alone system**
  - **Weather and Radar propagation were not "mapped" – too hard**
  - **Video was switched between operational and tactical displays**
    - ✓ **Visual integration of information happened "between the ears"**
  - **Text chat/messages were principal method of C2 / coordination**
  - **Available only in the Command Center**

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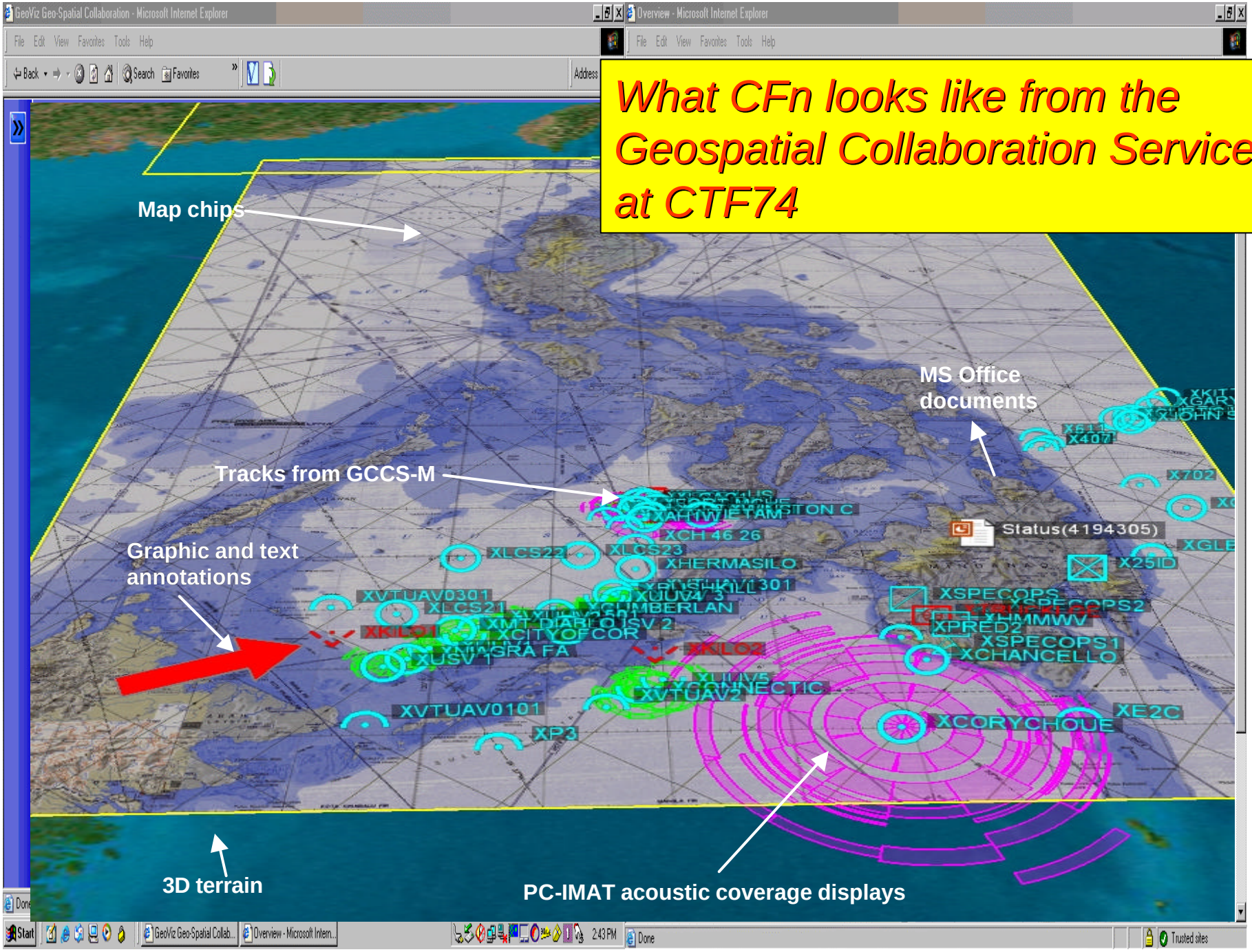
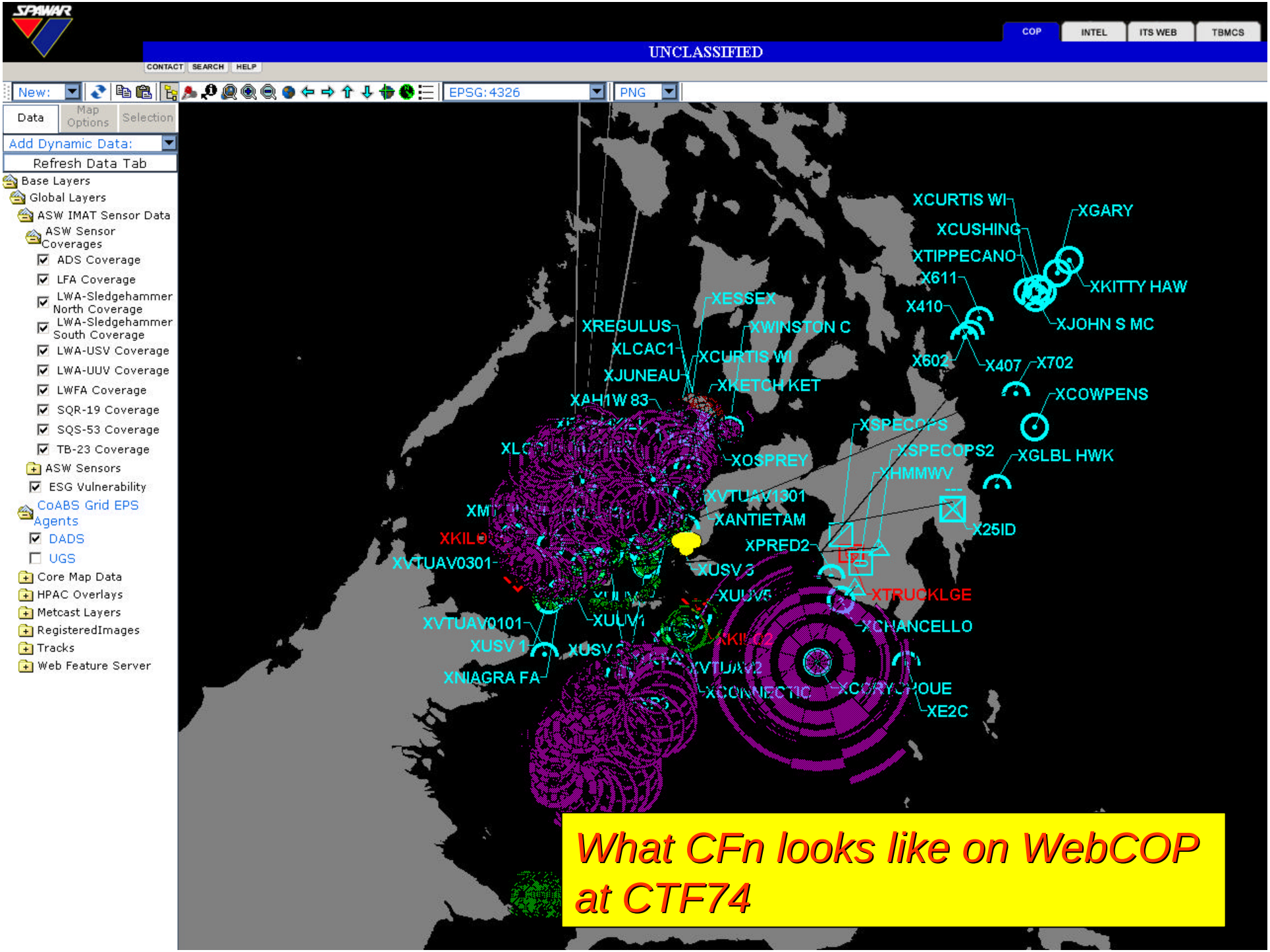
Enabling a Networked Naval Force

CTF 74 Today…….

- **Expanded desktop real estate**
  - **3-headed displays at all Command Center workstations**
- **Display Flexibility - select what goes on LSD and when to view GCCS**
- **Relevant displays are "layers" in CFn**
  - **GCCS-M tracks**
  - **IMAT**
  - **WSM**
  - **WECAN**
  - **USW-DSS (CUP)**
  - **AREPS (Enemy radar/friendly ship cruise missile coverage)**
- **Coordination / C2 supported by chat/messaging - now with a shared "user-defined" operational picture (UDOP) for "map chat" collaboration**
- **UDOP available at all SIPRNET terminals**

ASW Battle Watch Captain Workstation


What CFn looks like from the Geospatial Collaboration Service at CTF74
Map chips
Tracks from GCCS-M
Graphic and text annotations
MS Office documents
3D terrain
PC-IMAT acoustic coverage displays
GeoViz Geo-Spatial Collaboration - Microsoft Internet Explorer
Overview - Microsoft Internet Explorer
Status(4194305)
XCH 46 26
XLCS22
XLCS23
XHERMASILO
XVTUAV0301
XLCS21
XKILO1
XKILO2
XUSV 1
XVTUAV2
XVTUAV0101
XP3
XSPECOPS
XSPECOPS2
XPRED2
XSPECOPS1
XCHANCELLO
XCORYCHOUE
XE2C
X25ID
X407
X702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COP
INTEL
ITS WEB
TBMCS
UNCLASSIFIED
CONTACT
SEARCH
HELP
New:
EPSG:4326
PNG
Data
Map Options
Selection
Add Dynamic Data:
Refresh Data Tab
Base Layers
Global Layers
ASW IMAT Sensor Data
ASW Sensor Coverages
ADS Coverage
LFA Coverage
LWA-Sledgehammer North Coverage
LWA-Sledgehammer South Coverage
LWA-USV Coverage
LWA-UUV Coverage
LWFA Coverage
SQR-19 Coverage
SQS-53 Coverage
TB-23 Coverage
ASW Sensors
ESG Vulnerability
CoABS Grid EPS Agents
DADS
UGS
Core Map Data
HPAC Overlays
Metcast Layers
RegisteredImages
Tracks
Web Feature Server
XCURTIS WI
XGARY
XCUSHING
XTIPPECANO
X611
XKITTY HAW
X410
XJOHN S MC
XESSEX
XREGULUS
XWINSTON C
XLCAC1
XCURTIS WI
X602
X407
X702
XJUNEAU
XKETCH KET
XAH1W 83
XCOWPENS
XSPECOPS
XSPECOPS2
XGLBL HWK
XOSPREY
XHMMWV
XVTUAV1301
XANTIETAM
X25ID
XPRED2
XKILO
XVTUAV0301
XUSV 3
XTRUCKLGE
XULV5
XULV1
XCHANCELLO
XVTUAV0101
XUSV 1
XNIAGRA FA
XCONNECTIC
XE2C
What CFn looks like on WebCOP at CTF74

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Other Implementations of CFn

- **DARPA/ONR**
  - **S&T efforts such as PAL, Semantic Web**
- **Kunia Regional Security Operations Center (KRSOC)**
  - **Classified S/A**
- **THIRD FLEET Flag Briefing and Collaboration Facility (CORTEX)**
  - **Training and operational support**
- **Office of Disaster Preparedness (ODP)**
  - **Threat Awareness, First Response, Crisis Management**
- **JFCOM (JBC)**
  - **Support Experimentation**

Grand CFn Challenges

- **New Business Models in Development/Acquisition**
  - Acquisition strategies to achieve speed-to-capability, Technology transition strategies, & Strategies for small business
  - Enabling of Large Scale Integration
- **Speed-to-Certification**
  - Technical assessment
  - Role of OPEVAL
  - Accreditation policy
- **New Business Rules Across the Joint Force Enterprise**
  - Maintaining consistencies between organizations
- **Training in a Composeable Environment**
  - On-the-fly training vs utilization of structured TTPs and Doctrine
- **Technical Challenges**
  - Reality of “Open Systems”
  - Multi-level Security and Information pedigree and trust issues
  - Network Access, Bandwidth, Latencies, QOS
  - Computing Infrastructure
  - Situation Awareness / Decision Support (Cognition) Development, and Application of Modeling and Simulation